MitoPrime®

Fermentation-Based L-Ergothioneine

Available in 30 capsules

Clinical Applications

- Supports Neurologic and Cognitive Health*
- Provides Cellular Antioxidant Support*
- Supports Maintenance of Glutathione Levels Already in a Healthy Range*

MitoPrime® *features the concentrated form of the histidine derivative L-ergothioneine produced via a proprietary fermentation-based method. Through its antioxidant and cytoprotectant mechanisms, L-ergothioneine combats oxidative stress throughout the body and provides multiple health benefits.**

Discussion

L-ergothioneine (L-ET) is a naturally occurring thiol/thione derivative of histidine synthesized by certain fungi and bacteria.[1] In recent years, an abundance of scientific literature has demonstrated L-ET's antioxidant and cytoprotective properties; this research is driving intense interest in human health applications.[1,2] Because humans do not biosynthesize L-ET, they must acquire it through dietary intake.[1,2] Mushrooms are the richest dietary source of L-ET, but it also occurs in small amounts in other foods.

In mammals, the uptake of dietary L-ET is facilitated by a specialized cell-membrane transport protein (OCTN1), which accumulates in varying degrees in most tissues.[3] Individuals in the United States are estimated to consume less L-ET than those in some European countries; for instance, 1.1 mg/d (US) versus up to 4.6 mg/d (Italy).[1] Furthermore, L-ET levels decrease with age. Supplementation has proven to be an effective way to increase blood levels of L-ET. In a placebo-controlled, pharmacokinetic human study, oral supplementation (5 or 25 mg/d) of L-ET resulted in significant, dose-dependent increases in plasma and whole blood L-ET concentrations with high L-ET retention.*[4]

Antioxidant and Cytoprotectant

L-ET is considered an excellent physiological cytoprotectant, and its ability to quench reactive molecules is extensively documented.[2,3] In vitro and in vivo work demonstrates numerous important antioxidant-related effects.[5] Notably, L-ET has been shown to decrease the rate of oxidative stress–induced telomere shortening, which has implications for human longevity research.[6] In addition, decreases in nuclear and mitochondrial DNA damage suggest that L-ET is a genomic stabilizer.[7] Maintenance of cellular-reduced glutathione levels and induction of Nrf2/ARE-mediated antioxidant genes have also been demonstrated.[3,8] The unique antioxidant and cytoprotective mechanisms of L-ET make it an interesting candidate for longevity support, exercise performance, and many oxidative stress–related conditions.*[3,9]

Neurologic System Support

In the central nervous system, L-ET crosses the blood–brain barrier and is neuroprotective.[2,5] Blood levels of L-ET decline with age, and a faster decline is observed in individuals with mild cognitive impairment.[1,2] The results of a cross-sectional study (N = 496) correlated low levels of L-ET with dementia severity and suggested that serum L-ET could be a potential biomarker associated with cognitive impairment. Furthermore, neuroimaging showed that lower L-ET levels were significantly associated with cortical thinning and decreased hippocampal volumes.[10] In other research, animal study outcomes suggest that L-ET improves stress-related sleep disorders and relieves depressive-like behaviors.[11,12] In a 2022 double-blind, randomized clinical trial of individuals (N = 95) with reported high anxiety and sleep complaints, 20 mg/d of ergothioneine for 4 weeks reduced sleep difficulties, including frequency of waking.*[13]

MitoPrime®

MitoPrime is a 99% pure, concentrated L-ET ingredient developed via a proprietary fermentation-based method. This sustainable production method is preferable to chemical synthesis or expensive purification of L-ET from food and results in the stable thione-based L-isomer in free amino acid form.

Several MitoPrime studies document the efficacy of ergothioneine produced via this proprietary method. In vitro work in cells from healthy human donors showed the high cellular bioavailability of MitoPrime as noted by its accumulation in red blood cells with antioxidant properties left intact.[14] MitoPrime also showed strong antioxidant activity, protected cell viability, imparted cytokine-modulating and immune-support effects, significantly enhanced mitochondrial function, and substantially improved cellular energy production under oxidative stress conditions.[14] In irradiated human keratinocytes, 30 µM of MitoPrime slightly protected and increased the expression of genes (ie, Nrf2 regulated) involved in oxidative and cellular stress responses.[15] Studies involving *Caenorhabditis elegans* demonstrated significant dose-dependent increases in lifespan and changes in the expression of genes associated with insulin response, energy metabolism, and longevity pathways (eg, autophagy).[16] MitoPrime also slowed degeneration in a *C elegans* strain expressing amyloid beta in body muscles without negatively affecting its reproduction or development.[17] In a 2021 multi-case clinical report, subjects taking 25 mg/d of MitoPrime exhibited a 13% to 146% increase in total glutathione from baseline to day 30.*[18]

MitoPrime® Supplement Facts

Serving Size: 1 Capsule

	Amount Per Serving	%Daily Value
L-Ergothioneine[S1]	12.5 mg	**

** Daily Value not established.

Other Ingredients: Microcrystalline cellulose, dicalcium phosphate, capsule (hypromellose and water), ascorbyl palmitate, and silica.

DIRECTIONS: Take one capsule once or twice daily, or use as directed by your healthcare professional.

Consult your healthcare professional before use. Individuals taking medication should discuss potential interactions with their healthcare professional. Do not use if tamper seal is damaged.

STORAGE: Keep tightly closed in a cool, dry place out of reach of children.

FORMULATED TO EXCLUDE: Wheat, gluten, corn, yeast, soy, animal and dairy products, fish, shellfish, peanuts, tree nuts, egg, sesame, ingredients derived from genetically modified organisms (GMOs), artificial colors, and artificial sweeteners.

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VEGETARIAN CAPS

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Additional references available upon request

DRS-345
Rev. 02/10/23